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The understanding of plastic and reconstructive surgery amongst Queensland medical students

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ABSTRACT

The field of plastic and reconstructive surgery is a unique and poorly understood surgical subspeciality. There is a misunderstanding about the scope of the speciality amongst both the public and professionals. Medical schools provide a unique opportunity to educate future medical practitioners on the role of surgical subspecialities.

Medical students at the Griffith University in Queensland, Australia, were invited to participate in a 30-question electronic survey to analyse their understanding of the surgical subspecialities. The students were asked to choose which surgical subspeciality would be most likely to treat the surgical condition. The five key areas of plastic and reconstructive surgery were included.

The survey involved 234 medical students. In total, 115 (49%) students were in their clinical years, with 23 students having completed a rotation in plastic surgery. Of the hand, maxillofacial and reconstructive operations, the chances of a student selecting a plastic surgeon as the primary operator significantly improved if they had plastic surgery experience. Students were more likely to associate plastic surgeons with cosmetic procedures.

This study has highlighted the gap between a medical student's perception and reality of the scope of Plastic and Reconstructive Surgery. It has emphasised the need for greater exposure and education in this surgical subspeciality if future medical

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practitioners are to better match the requirements of their patients to the skills of the specialist. If plastic surgeons wish to continue to be recognised as specialists in hand, craniofacial and reconstructive surgery, this gap between perception and reality needs to be addressed.

Introduction

The field of plastic and reconstructive surgery is a unique and poorly understood surgical subspeciality. In contrast to other subspecialities, it is not restricted by patient, pathology or anatomical site. Rather, it is driven by surgical technique, challenging surgeons to be malleable to each new clinical situation. Although this versatility is a defining feature of the speciality, it also leads to confusion. There is a misunderstanding surrounding the scope of plastic and reconstructive surgery amongst both the public[1] and professionals.[2,3] This misperception extends to medical students in both the United States (US) and the United Kingdom (UK).[4,5]

Medical student awareness of plastic and reconstructive surgery has multiple implications. Poor awareness has repercussions for both future surgical and non-surgical trainees. The latter is likely more significant as they will form a significant section of a plastic surgeon referral base. In addition, an improved understanding would expedite the referral process, reducing the cost to both patients and the healthcare system. With the increasingly tense economic climate in healthcare, improving the efficiency of the system has never been more important.

Previous evidence suggests that exposure to plastic surgery significantly increases students' knowledge of the speciality, including specialist topics such as cleft surgery.[7] However, the number of medical schools including plastic surgery as an independent part of the curriculum is declining.[6] Medical schools provide a unique opportunity to educate future medical practitioners on the scope of surgical subspecialities. With these benefits in mind, we sought to determine the understanding of plastic and reconstructive surgery among Australian medical students, with a particular focus on the influence of a rotation in the subspeciality. We hypothesise that medical students do not understand the full scope of plastic surgery; however, this improves with subspeciality exposure.

Methods

An email was sent to all medical students ($n = 590$) at the Griffith University in Queensland, Australia, inviting them to participate in a 30-question electronic survey to analyse their understanding of the surgical subspecialities (see Table 2). The students were presented with 25 different surgical scenarios and asked to choose which surgical subspeciality would be most likely to treat the surgical condition, out of the eleven surgical subspecialities listed (see Table 1). For cases potentially requiring multidisciplinary care, students were asked to select the primary operator only. Among the presented scenarios, 20 outlined a condition/operation routinely managed by a plastic and reconstructive surgeon. The scenarios were not exhaustive but attempted to cover the full scope of plastic surgery (see Figure 1). Five of the presented scenarios outlined a procedure/operation routinely managed by another subspeciality (e.g., appendicectomy) to blind the students to the plastic surgery focus of the survey.

All statistical analyses were performed using the IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp. Univariate frequency differences, odds ratios, 95% confidence intervals, *p*-values were calculated by chi-squared analysis.

Table 1
Number of students selecting each surgical speciality by clinical scenario.

	Car	Gen	Neur	Orth	ENT	Paed	Plast	Urol	Vasc	Max	Opth
Sacral pressure sore	0	186	0	37	0	0	0	0	11	0	0
Total hip replacement	0	2	0	232	0	0	0	0	0	0	0
Breast reconstruction following mastectomy	0	23	0	0	0	0	211	0	0	0	0
Orbital floor fracture	0	8	0	4	0	0	3	0	0	197	22
Lacerated flexor tendon of hand	0	33	9	125	0	0	47	0	20	0	0
Rhinoplasty	0	2	0	0	61	0	157	0	0	14	0
Full-thickness abdominal burn	0	28	0	0	0	0	191	0	15	0	0
Appendicectomy	0	230	0	0	0	4	0	0	0	0	0
Metacarpal fracture	0	9	0	221	0	0	4	0	0	0	0
Abdominoplasty	0	36	0	0	0	0	198	0	0	0	0
Breast reduction	1	6	0	0	0	0	227	0	0	0	0
Cleft palate repair	0	2	2	16	42	22	31	0	0	119	0
Carpal tunnel release	0	61	25	119	0	0	21	0	8	0	0
Liposuction	22	0	0	0	0	0	212	0	0	0	0
Traumatic ear laceration	0	10	0	0	165	0	51	0	0	8	0
Breast augmentation	0	2	0	0	0	0	232	0	0	0	0
Mandible fracture	0	0	0	21	0	0	10	0	0	203	0
Tonsillectomy	0	49	0	0	173	10	1	0	0	1	0
Lower leg skin graft	0	49	0	6	0	0	161	0	18	0	0
Wisdom teeth removal	0	14	0	4	11	0	0	0	0	205	0
Excision of lip melanoma	0	96	0	0	7	0	103	0	0	28	0
Finger replantation	0	0	9	81	0	0	47	0	97	0	0
Zygomatic fracture	0	0	0	26	0	0	6	0	0	202	0
Facelift	0	3	0	0	0	0	209	0	0	22	0
Acutely ischaemic foot	0	11	1	8	0	0	0	0	214	0	0
Nipple reconstruction following mastectomy	0	17	0	0	0	0	217	0	0	0	0

Car indicates cardiothoracic surgery; Gen, general surgery; Neur, neurosurgery; Orth, orthopaedic surgery; ENT, ear nose and throat surgery; Paed, paediatric surgery; Plat, plastic & reconstructive surgery; Urol, urology; Vasc, vascular surgery; Max, maxillofacial surgery; Opth, ophthalmology.

Results

Overall, 234 medical students completed the online survey (40% response rate, margin of error ±5%). There were no differences in the baseline demographics (see Table 2). In total, 115 students (49%) were in their clinical years, with 23 students having completed a rotation in plastic surgery. Sixty-five (28%) students had an interest in surgery with nine being particularly interested in plastic surgery.

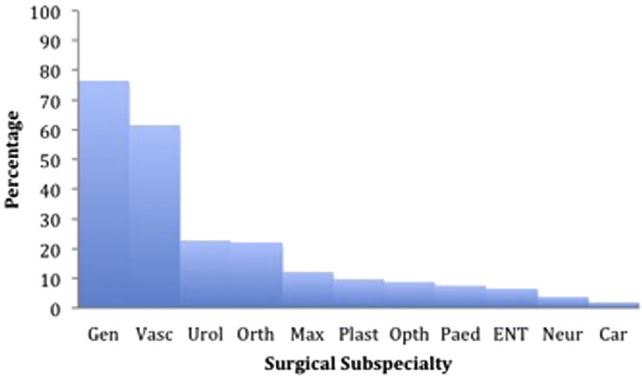

Figure 1. Surgical subspeciality experience amongst students in clinical years. Car indicates cardiothoracic surgery; Gen, general surgery; Neur, neurosurgery; Orth, orthopaedic surgery; ENT, ear nose and throat surgery; Paed, paediatric surgery; Plat, plastic & reconstructive surgery; Urol, urology; Vasc, vascular surgery; Max, maxillofacial surgery; Opth, ophthalmology.

Table 2
Baseline demographics between groups.

	Preclinical (%, $n = 115$)	Clinical (%, $n = 119$)	
		No experience (%, $n = 96$)	Experience (%, $n = 23$)
Age (years)			
<20	5	4	4
20–29	84	79	80
30–39	11	17	16
Gender			
Male	38	42	40
Female	62	58	60

Out of the four scenarios concerning hand surgery, a plastic surgeon was chosen as the primary operator in 14% of responses. This increased to 77% ($p < 0.05$) in those students who had completed a plastic surgery rotation. Out of the four scenarios concerning craniofacial surgery, a plastic surgeon was chosen as the primary operator in 5% of responses, increasing to 41% ($p < 0.05$) in those students experienced in plastic surgery. Out of the five scenarios concerning reconstructive surgery, a plastic surgeon was chosen as the primary operator in 67%, compared to 91% ($p < 0.05$) of the students exposed to the speciality. A plastic surgeon was chosen as the primary operator for 84% of the cosmetic operations and 96% of the breast operations. This was not influenced by student experience (see Figure 2).

Discussion

This study demonstrates that the speciality of plastic and reconstructive surgery is poorly understood by Australian medical students. This poor understanding extends to students in both preclinical and clinical years, but significantly improves with speciality exposure.

Students were much more likely to associate the speciality of plastic and reconstructive surgery with cosmetic procedures. This is likely influenced by the media portrayal of the speciality.[8] The speciality has a public profile, more popular than that of most surgical subspecialities.[9] It has been suggested that the misconception is also influenced by the word 'plastic' in the title, with some authors suggesting a change of name.[10] These findings are consistent with those previously published by Agarwal et al who identified non-cosmetic procedures, particularly hand surgery, being most poorly associated with the speciality amongst US medical students.[5]

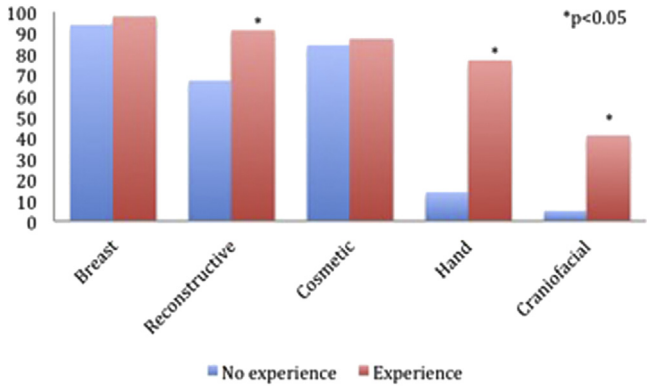

Figure 2. Clinical scenarios where plastic and reconstructive surgery was chosen grouped by prior clinical exposure to plastic and reconstructive surgery.

The results of this study are quite disconcerting. The implication of this poor understanding extends beyond the medical students. It has been previously shown that perceptions held in medical schools continue to be analogous in general practice.[1] This is of concern as up to 50% of the Australian medical graduates go on to a career in general practice.[11] This is detrimental to the speciality in multitude ways, including the loss of referrals, discouragement of students to pursue plastic surgery as a speciality, loss of the optimal candidates to other specialities, and loss of respect amongst the medical community.

Evidently, exposure to plastic surgery improves students' knowledge of the scope of practice. Efforts should therefore be made towards promoting this exposure. This would ideally be achieved by rotations in the clinical years, but may also be augmented by didactic lectures, career days or skill workshops in the preclinical years of learning.

This study not without its weaknesses: Voluntary online surveys have inherent selection biases, with students interested in surgery more likely to participate. The results also represent a single institution and are therefore influenced by local teaching and clinical exposure.

This study has highlighted the gap between a medical student's perception and reality of the scope of plastic and reconstructive surgery. It has emphasised the need for greater exposure and education in this surgical subspeciality if future medical practitioners are to better match the requirements of their patients to the skills of the specialist. If plastic surgeons wish to continue to be recognised as specialists in hand, craniofacial and reconstructive surgery, this gap between perception and reality needs to be addressed.

Conclusion

Queensland medical students are not conscious of the full scope of plastic surgery. Whilst they are acutely aware of the association of plastic surgery with breast and cosmetic surgery, they are unaware of the plastic surgeon's role in hand, craniofacial and reconstructive surgery. If not addressed, this misconception may be detrimental to the speciality for the years to come.

Conflict of interest statement

None.

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